

solid state communications

an international journal

volume 98



Pergamon

SOLID STATE COMMUNICATIONS

EDITOR-IN-CHIEF, MANUEL CARDONA

ASSOCIATE EDITOR-IN-CHIEF, ARON PINCZUK

BOARD OF EDITORS

S. ALEXANDER, *Rehovot*
G. BASTARD, *Paris*

P. BURLET, *Grenoble*
C. CALANDRA, *Modena*
R. G. CLARK, *New South Wales*

M. F. COLLINS, *Hamilton*

J. H. DAVIES, *Glasgow*

P. H. DEDERICH, *Jülich*

F. J. DiSALVO, *Ithaca*
R. C. DYNES, *La Jolla*
A. L. EFROS, *Salt Lake City*

H. ESCHRIG, *Dresden*

G. FASOL, *Tokyo*

Z. GAN, *Beijing*
C. E. T. GONCALVES DA SILVA, *Campinas*

M. GRYNBERG, *Warsaw*
E. L. IVCHENKO, *St Petersburg*
J. JOFFRIN, *Paris*

H. KAMIMURA, *Tokyo*

L. V. KELDYSH, *Moscow*

J. KUHL, *Stuttgart*
D. J. LOCKWOOD, *Ottawa*
H. VON LÖHNESEN, *Karlsruhe*

S. G. LOUIE, *Berkeley*

B. LUNDQVIST, *Göteborg*

A. H. MACDONALD, *Bloomington*
E. E. MENDEZ, *Stony Brook*

E. MOLINARI, *Modena*
A. OKIJI, *Osaka*

R. PHILLIPS, *Cambridge*
C. N. R. RAO, *Bangalore*
T. TSUZUKI, *Sendai*
D. VAN DYCK, *Antwerp*
P. WACHTER, *Zürich*
F. YNDURÁIN, *Madrid*

A. ZAWADOWSKI, *Budapest*

Department of Chemical Physics, Weizmann Institute of Science, Rehovot 76100, Israel
Laboratoire de Physique de la Matière Condensée de l'ENS, 24 rue L'homond, F-75231 Paris Cedex 05, France

CEA Grenoble, DRFMC/SPSMS - MDN, F-3804 Grenoble Cedex 09, France
Università di Modena, Dip. di Fisica, Via Campi 213/A, I-41100 Modena, Italy
National Pulsed Magnet Laboratory, The University of New South Wales, P.O. Box 1, Kensington, New South Wales, Australia, 2033

Department of Physics and Astronomy, McMaster University, Hamilton, Ontario L8S 4M1, Canada

Department of Electronics and Electrical Engineering, University of Glasgow, Glasgow, G12 8QQ, U.K.

Institut für Festkörperforschung der Kernforschungsanlage Jülich, GmbH, Postfach 1913 D-52428 Jülich, Germany

Cornell University, Chemistry Department, Baker Laboratory, Ithaca, NY 14853-1301, U.S.A.

University of California, Physics Department, La Jolla, CA 92093, U.S.A.

Department of Physics, University of Utah, 201 Fletcher Building, Salt Lake City, UT 84112, U.S.A.

MPG Research Group Electron Systems, Department of Physics, TU Dresden, D-01062 Dresden, Germany

University of Tokyo, Institute of Industrial Science, 7-22-1 Roppongi, Minato-ku, Tokyo 106, Japan

Department of Physics, Peking University, Beijing 100871, People's Republic of China

Laboratório Nacional de Luz Sincrotron/CNPq/MCT, Caixa Postal 6192, Campinas 13081-970 SP, Brazil

Institute of Experimental Physics, University of Warsaw, ul. Hoza 69, PL-00681 Warsaw, Poland

A. F. Ioffe Physico-Technical Institute, Politehnicheskaya 26, 194021 St Petersburg, Russia

Université Paris-Sud, Laboratoire de Physique des Solides, Bâtiment 510, F-91405 Orsay, France

The University of Tokyo, Department of Applied Physics, Faculty of Science, 1-3 Kagurazaka, Shinjuku-ku, Tokyo 162, Japan

P. N. Lebedev Institute, Academy of Sciences of the U.S.S.R. Leninskii Prospect 53, 117924 Moscow, Russia

Max-Planck-Institut für Festkörperforschung, Heisenbergstrasse 1, D-70569 Stuttgart, Germany

IMS, Building M-36, National Research Council, Ottawa, Ontario K1A 0R6, Canada

Physikalisches Institut der Universität Karlsruhe (TH), Engesserstrasse 7, D-76128 Karlsruhe, Germany

University of California, Physics Department, 366 Le Conte Hall Nr. 7300, Berkeley, CA 94720-7300, U.S.A.

Institute of Theoretical Physics, Chalmers University of Technology, S-412 96 Göteborg, Sweden

Department of Physics, Indiana University, Bloomington, IN 47405, U.S.A.

Department of Physics, State University of New York at Stony Brook, Stony Brook, NY 11794-3800, U.S.A.

Dipartimento di Fisica, Università di Modena, Via Campi 213/A, I-41100 Modena, Italy

Department of Applied Physics, Faculty of Engineering, Osaka University, Suita, Osaka 565, Japan

Cavendish Laboratories, Madingley Road, Cambridge CB3 0HE, U.K.

Indian Institute of Science, CSIR Centre of Excellence in Chemistry, Bangalore 560012, India

Department of Physics, Faculty of Science, Tohoku University, Aoba-ku, Sendai 980, Japan

University of Antwerp (RUCA), Groenenborgerlaan 171, B-2020 Antwerp, Belgium

Laboratorium für Festkörperphysik der ETH, CH-8093 Zürich, Hönggerberg, Switzerland

Dpto. de Física de la Materia Condensada C-III, Universidad Autónoma de Madrid, Cantoblanco, 28049-Madrid, Spain

Institute of Physics, Technical University of Budapest, XI.Budafoki út. 8, H-1521 Budapest, Hungary

PRODUCTION EDITOR

E. AITKEN, Production Department, Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K.

SOLID STATE COMMUNICATIONS is a companion journal to THE JOURNAL OF PHYSICS AND CHEMISTRY OF SOLIDS.

Publishing and Advertising Offices: Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A.; Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K. Tel., Oxford (01865) 843000. Fax., Oxford (01865) 843010.

Copyright © 1996 Elsevier Science Ltd

Subscription enquiries from customers in North America should be sent to: Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A. and for the remainder of the world to: Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K. Annual Institutional Subscription Rates (1996): North, Central and South America U.S.\$2327.00. Rest of World £1463.00. Associated Personal Subscription Rates are available on request for those whose institutions are library subscribers. Sterling prices exclude VAT. Non-VAT registered customers in the European Community will be charged the appropriate VAT in addition to the price listed. Prices include postage and insurance and are subject to change without notice.

Back Issues: Back issues of all previously published volumes, in both hard copy and on microform, are available direct from Elsevier Science offices (Oxford, New York).

PERIODICALS POSTAGE PAID AT NEWARK, NEW JERSEY AND ADDITIONAL ENTRY POINTS. Solid State Communications (ISSN 0038-1098) is published four issues per month January to December in four volumes, by Elsevier Science Ltd., The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K. The annual subscription in the U.S.A. is \$2327. Solid State Communications is distributed by Mercury Airfreight, 10 Campion Road, Irvington, New Jersey 07111-1105.

POSTMASTER: Please send address corrections to Solid State Communications, c/o Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153.

APRIL

VOLUME 98, NUMBER 1

1996

(Published 23 February 1996)

CONTENTS

T. Onogi and S. Doniach

1 Simulation of quantum melting of the vortex lattice and of fractional quantum Hall-like states of the quantum vortex liquid in 2D superconductors

B. C. den Hertog and M. P. Das

7 Slave boson treatment of metal insulator transition in the CuO plane at zero and finite doping

M. P. Gelfand

11 Series expansions for excited states of quantum lattice models

L. Gehlhoff

15 Density correlations within the time-continuum slave-boson functional integral formulation: comparison with an alternative approach

J. Wosnitza, D. Beckmann, S. Wanka,
J. A. Schlueter, J. M. Williams, D. Naumann and
T. Roy

21 Thermodynamic properties of the organic superconductor $\kappa_L\text{-}(\text{ET})_2\text{Ag}(\text{CF}_3)_4\text{-TCE}$

N. Garro, A. Cantarero, M. Cardona, T. Ruf,
A. Göbel, C. Lin, K. Reimann, S. Rübenacke and
M. Steube

27 Electron-phonon interaction at the direct gap of the copper halides

T. Plackowski and D. Włosewicz

31 Specific heat of $\text{Er}_{1-x}\text{Y}_x\text{Ba}_2\text{Cu}_3\text{O}_{7-\delta}$. An observation of crystalline electric field contribution

A. Zheludev and S. M. Shapiro

35 Uniaxial stress dependence of the $[\zeta\zeta 0]\text{-TA}_2$ anomalous phonon branch in Ni_2MnGa

R. Franco, M. A. Blanco, A. Martín Pendás,
E. Francisco and J. M. Recio

41 Atomistic simulation of the pressure-temperature-volume diagram in $\alpha\text{-Al}_2\text{O}_3$

R. Schäfer and G. Bergmann

45 Nb atoms on the surface of Ag, an unexpected Kondo system

A. V. Korolev and M. A. Liberman

49 Refraction spectrum due to polariton condensation in a high magnetic field

Wei Bao, C. H. Chen, S. A. Carter and
S.-W. Cheong

55 Electronic phase separation and charge ordering in $(\text{Sr},\text{La})_2\text{MnO}_4$: indication of triplet bipolarons

R. P. S. M. Lobo and F. Gervais

61 Infrared signature of charge disproportionation in BaBiO_3 and related compounds

C. Tanguy

65 Complex dielectric constant of two-dimensional Wannier excitons

M. Tamine and J. M. Greneche

69 Magnetic frustration in infinite Heisenberg cubic ferrimagnets

T. V. Chandrasekhar Rao, V. C. Sahni,
P. V. Ravindran and L. Varshney

73 Evolved gas analysis of $\text{YBa}_2\text{Cu}_3\text{O}_x$

A. Rastogi, P. R. Apte, R. Pinto, M. S. Hegde and
S. V. Bhat

77 Effects of granularity on magnetic field dependent microwave response and surface degradation in thin films of $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$

S. Panwar and I. Singh

83 Hall effect in heavy fermion systems

M. R. A. Shegelski and S. Faltus
 S. K. Patapis, J. C. Spirlet and J. Fuger
 D. C. Saha, T. N. Misra and D. Talukdar
 L. F. Makarenko
 V. H. Tran, F. Bourée, G. André and R. Troc
 J. A. Norcross and D. C. Ailion

APRIL

87 Theory of freezing temperatures of metallic spin glass multilayers
 99 Magnetic investigation of the uranium-molybdenum silicide
 103 Percolation of triplet excitation in restricted geometries
 107 An explanation of electronic structure for thermal double donors in silicon
 111 X-Ray and neutron powder diffraction studies of UlrGe and UAuGa
 119 ^{109}Ag NMR lineshape study of the $3q$ incommensurate insulator Ag_3AsS_3
 i Instructions for Authors on the Preparation of Camera-ready Manuscripts
 vii Keywords

VOLUME 98, NUMBER 2

1996

(Published 1 March 1996)

CONTENTS

A.V. dos Santos and C. A. Kuhnen
 J. Banhart, A. Verne and H. Ebert
 Y. Yokoya and Y. O. Nakamura
 F. Ichikawa, Y. Yamasaki, T. Nishizaki, T. Fukami, T. Aomine, S. Kubo and M. Suzuki
 R. Grassme and P. Seidel
 Ph. Galez, J.-M. Moreau, J. Marcus and C. Escribe-Filippini
 V. Müller, A. Fuih, J. Fousek, H. Warhanek and H. Beige
 Q. D. Jiang, D. M. Smilgies, R. Feidenhans'l, M. Cardona and J. Zegenhagen
 S.-W. Cheong, H. Y. Hwang, B. Batlogg and L. W. Rupp Jr
 Zheng Wen-Chen
 P. Langot, R. Tommasi and F. Vallée
 V. Buntar, H. W. Weber and M. Riccò
 R. Castañer, C. Prieto, A. de Andrés, J. L. Martínez, J. Trigo and J. M. Sanz
 K.-H. Yoo, N. H. Hur, I. S. Kim, Y. B. Kim, Y. K. Park, J. C. Park, Y. Y. Song and S. C. Yu
 V. M. Demidovich, G. B. Demidovich, V. R. Karib'yants and S. N. Kozlov
 S. Ghosh and V. Kumar

123 Magnetic and electronic structure of Ni/Ag bilayers
 129 Spin-orbit interaction and spontaneous galvanomagnetic effects in ferromagnetic alloys
 133 Effect of varying the electronic band-filling on the temperature dependence of the superconducting energy gap
 139 Magnetoresistance in a $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_4$ thin film below T_c
 143 An upper bound for the gap ratio of superconductors within the BCS theory for weak coupling
 147 Structure and electrical resistivity of the new yellow oxygenated molybdenum bronze $\text{GdMo}_{16}\text{O}_{44}$
 153 Elastic properties of purified $[\text{N}(\text{CH}_3)_4]_2\text{CuCl}_4$ crystals near the ferroelastic lock-in transition
 157 Surface morphology and in-plane-epitaxy of $\text{SmBa}_2\text{Cu}_3\text{O}_{7-\delta}$ films on SrTiO_3 (001) substrates studied by STM and grazing incidence X-ray diffraction
 163 Giant magnetoresistance in pyrochlore $\text{Tl}_{2-x}\text{In}_x\text{Mn}_2\text{O}_7$
 167 Explanation of the pressure-induced red shifts of $^2E-4A_2$ transition line for Cr^{3+} ions in the two sites of chrysoberyl
 171 Cold-phonon effect on electron heating in GaAs
 175 Magnetic irreversibility of C_{60} , C_{70} and $\text{I}-\text{C}_{50}$ fullerenes at low temperature: transition to a frozen magnetic glass state?
 179 Structural behavior of sputtered Co/Cu multilayers
 185 Critical currents and irreversibility lines in $\text{Hg}_{1-x}\text{Tl}_x\text{Ba}_2(\text{Ca}_{0.86}\text{Sr}_{0.14})_2\text{Cu}_3\text{O}_{8+\delta}$
 189 Influence of the adsorption of organic molecules on the charge state of the germanium-electrolyte system
 195 Deep level transient spectroscopic study of DX center in heavily doped ion-implanted GaAs
 201 Erratum
 i Keywords

APRIL

VOLUME 98, NUMBER 3

1996

(Published 8 March 1996)

CONTENTS

G. Roma, C. M. Bertoni and S. Baroni 203 The phonon spectra of LiH and LiD from density-functional perturbation theory

R. Niemann, K. Buse, R. Pankrath and M. Neumann 209 XPS study of photorefractive $\text{Sr}_{0.61}\text{Ba}_{0.39}\text{Nb}_2\text{O}_6:\text{Ce}$ crystals

L. H. M. Barbosa, A. Latgé, M. de Dios Leyva and L. E. Oliveira 215 Magnetic field effects on donor transitions in quantum wells

M. Aprili, P. Nédellec and L. Dumoulin 221 Study of magnetism in percolating nickel films via the extraordinary Hall effect

Ji-Xin Yu and Jian-Bai Xia 227 Collective excitations in the coupled quantum wires

Min Wang, Heling Yi and Shousheng Yan 235 $1/f$ noise in epitaxial $\text{Nd}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ films

J. H. Kim, M. Kim, S.-B. Kim and J. H. Hahn 241 Temperature-dependent second harmonic generation in ${}^6\text{LiRbSO}_4$ and ${}^7\text{LiRbSO}_4$

K. Okamoto 245 Plateau of the magnetization curve of the $S = 1/2$ ferromagnetic-ferromagnetic-antiferromagnetic spin chain

M. Maglione, G. Niquet, A. Gueldry and C. Dumas 249 Dielectric investigation of the dipolar freezing in $\text{LiCl}_x\text{H}_2\text{O}$

M. Apostol, C. Goze, F. Rachdi, M. Mehring and J. E. Fischer 253 On the structural distortion in Rb_3C_{60} and K_3C_{60} revealed by ${}^{87}\text{Rb}$ - and ${}^{39}\text{K}$ -NMR

Hongge Pan, Fuming Yang, Changpin Chen, Ning Tang, Xufeng Han, Jianli Wang, Jifan Hu, Kaiwen Zhou, Ruwen Zhao and Qidong Wang 259 The intrinsic magnetic properties of novel $\text{R}_3(\text{Fe},\text{Mo})_{29}$ compounds ($\text{R} = \text{Ce, Nd, Sm, Gd and Y}$)

265 Erratum

i Keywords

APRIL

VOLUME 98, NUMBER 4

1996

CONTENTS

E. C. Pereira, A. Pawlicka, L. O. S. Builhões, O. R. Nascimento and L. Walmsley 267 Two-phase separation observed in thermally treated pellets of ClO_4^- doped poly(3-methylthiophene) from electron spin resonance measurements

A. Aydinli, A. Serpengüzel and D. Vardar 273 Visible photoluminescence from low temperature deposited hydrogenated amorphous silicon nitride

P. C. Liao, J. K. Huang, Y. S. Huang and T. R. Yang 279 An optical-absorption study of RuTe_2 single crystals

M. Mukoujima, K. Kawabata and T. Sambongi 283 Unusual motion of twin boundary in $(\text{TMTSF})_2\text{PF}_6$ single crystal under constant stress

R. T. Phillips, G. C. Nixon, T. Fujita, M. Y. Simmons and D. A. Ritchie 287 Excitonic trions in undoped GaAs quantum wells

E. Hatta and K. Mukasa 293 Electron tunneling into thin films of antimony

F. Dujardin, N. Marréaud and J. P. Laurenti 297 Valence band structure of very narrow InGaAs/InP quantum wells

P. Lefebvre, T. Richard, H. Mathieu and J. Allègre 303 Influence of spin-orbit split-off band on optical properties of spherical semiconductor nanocrystals. The case of CdTe

P. Castrillo, G. Armelles and J. Barbolla 307 Raman response of (111)-oriented GaAs/AlAs superlattices within the framework of the bond polarizability model

J. J. Vibente Alvarez and C. A. Balseiro
 H. L. Neal
 S. Mukherjee, R. Ranganathan and S. B. Roy
 K. Kyuno, J.-G. Ha, R. Yamamoto and S. Asano
 M. S. Chae, J. Herrmann, S. H. Han, M. T. Simnad and M. B. Maple
 Jun-jie Shi
 L. X. Zhou, J. R. Hardy and H. Z. Cao
 Q. L. Yan, X. L. Zeng and W. T. Li
 I. Ardelean, M. Peteanu, E. Burzo, F. Ciorcas and S. Filip
 G. González de la Cruz, I. Delgadillo and A. Calderón
 Z. Fang, Z. L. Liu, K. L. Yao and Z. G. Li
 K. Byczuk, J. Spalek and J. M. Honig

313 Phase fluctuations of the superconducting order parameter in high-T_c systems
 317 Notes on the Hubbard model at $d = \infty$
 321 AC susceptibility study of $\text{Ce}(\text{Fe}_{0.9}\text{Al}_{0.1})_2$
 327 Theoretical study on the Co layer thickness dependence of the magnetic anisotropy of Pd/Co multilayers
 333 Superconducting properties of Ce-substituted $\text{HgBa}_2\text{CuO}_{4+\delta}$
 337 Comment on "phonon polariton modes in semiconductor superlattices"
 341 Dynamical simulations of superionicity in alkaline-earth halides
 347 Optical emission spectra of Fe^{3+} ions in LiNbO_3 single crystal
 351 EPR and magnetic susceptibility studies of Cu^{2+} ions in $\text{TeO}_2\text{-B}_2\text{O}_3\text{-PbO}$ glasses
 357 Tunneling lifetime broadening on quantum well in an electric field
 361 Stability of the high-spin ground state in alternant π -conjugated organic molecules: effects of the non-nearest neighbor hopping interactions of π -electrons
 367 Intermediate statistics of interacting electrons: a bond approach
 373 Erratum
 i Author Index Nos 1-4
 v Keywords

MAY

VOLUME 98, NUMBER 5

1996

(Published 5 April 1996)

CONTENTS

D. Šestović and M. Šunjić
 A. Getter, I. E. Perakis and S. A. Jackson
 S. Özdemir, R. A. Süleymanov, E. Civan and T. Firat
 R. Y. Gu, D. Y. Xing and J. M. Dong
 T. Honma, K. Yamaya, N. Mori and M. Tanimoto
 M. Nagasawa, T. Sambongi and H. Anzai
 S. L. M. Schroeder
 B. Boechat, A. Saguia and M. A. Continentino
 Zhu Jing-Sheng, Liu Xian-Ming, Xu Shi-Hong, Wu Jian-Xin and Sun Xue-Feng
 V. B. Kokshenev, M. C. Nemes and J. L. Kim

III Editorial Note
 375 Tunneling barrier reduction and asymmetry in scanning tunneling microscope due to dynamical screening
 379 Transition in the nature of magnetoexcitons in shallow quantum wells
 385 Thermally stimulated current in layered semiconductor TiInS_2 with incommensurate phase
 391 Transport for currents at angle to the plane of layers in magnetic multilayers
 395 Effects of oxygen doping and pressure on superconducting transition temperature in $\text{Y}_{0.9}\text{Ca}_{0.1}\text{Ba}_2\text{Cu}_3\text{O}_y$
 401 The threshold electric field for the sliding spin-density wave
 405 Towards a 'universal curve' for total electron-yield XAS
 411 Random spin-1 quantum chains
 417 X-Ray and ultraviolet photoemission study of the formation and band lineup of $\text{C}_{60}/\text{Si}(111)$ interface
 421 On the dynamics of the spin-1/2 Ising model in a transverse field

M. Arshed, M. Siddique, M. Anwar-ul-Islam, A. Ashfaq, A. Shamim and N. M. Butt

M. Arshed, M. Siddique, M. Anwar-ul-Islam, A. Ashfaq, A. Shamim and N. M. Butt

A. Šimůnek and G. Wiech

M. März, J. Reinke, S. Greulich-Weber, J.-M. Spaeth, H. Overhof, E. N. Mokhov, A. D. Roenkov and E. N. Kalabukhova

B. Faust, H.-J. Reyher and O. F. Schirmer

K. M. Ault and R. A. Secco

S. Roshko and W. Dietsche

H. Bahlouli

M. C. Böhm, T. Schedel-Niedrig, H. Werner, R. Schlögl and J. Schulte

L. I. Kurkina and O. V. Farberovich

Chang-Sik Son, Seong-II Kim, Tae-Geun Kim, Yong Kim, Moo-Sung Kim and Suk-Ki Min

L. F. Lastras-Martínez and A. Lastras-Martínez

427 Isochronal crystallization of metglass $Fe_{83}B_{17}$ using Mössbauer effect and resistivity measurements

431 Phase transition in melt-spun $Fe_{88}B_{12}$ and $Fe_{72}B_{28}$ alloys by resistivity measurements and Mössbauer spectroscopy

435 Si L-emission band of $CrSi_2$

439 Electron paramagnetic resonance of the scandium acceptor in 6H silicon carbide

445 Optically detected magnetic resonance of $Fe^{4+}-O_1$ in $KTaO_3$

449 High pressure conductivity study of the α -quartz \rightarrow rutile transformation in GeO_2

453 Phonon spectroscopy in high magnetic fields: the B^+ center in Si

457 Hopping transport through amorphous junctions

463 Solid state electronic structure of Ba_3C_{60} —a model approach

469 Electronic structure and chemical potential of small jellium clusters at nonzero temperatures

475 Effects of rapid thermal annealing on the electrical properties of heavily carbon-doped $InGaAs$

479 Dislocation-induced effects in the reflectance-difference spectrum of semi-insulating $GaAs(100)$

i Keywords

MAY

VOLUME 98, NUMBER 6

1996

(Published 16 April 1996)

CONTENTS

G. Boureau and S. Carniato

I. S. Gorban, M. M. Biliy, I. M. Dmitruk and O. A. Yeshchenko

P. Erdös and R. C. Herndon

P. Massiot, C. Perrin, M. Guilloux-Viry, J.-C. Jegaden, A. Perrin and M. Sergent

L. V. Chebotarev

D. X. Li, Y. Haga, H. Shida and T. Suzuki

V. D. Ashkenazy, M. Bonaldi, G. Jung, B. Ya. Shapiro and S. Vitale

Jianjun Liu, Wanlin Zhang and Guangyin Zhang

Dafang Zheng, Youyan Liu and Z. D. Wang

A. Afanasiev and F. Luty

485 Apparent discrepancies between thermodynamic data and theoretical calculations of the formation energy of an oxygen vacancy in silica

489 Biexcitonic liquid in monoclinic zinc diphosphide crystals

495 Resistance of a one-dimensional periodic chain of random potentials

501 *Ex-situ* fluorination of oxygen deficient $YBa_2Cu_3O_x$ thin films deposited by laser ablation on (100) $SrTiO_3$ substrates

507 Total delay time for a particle's tunneling through a smooth potential barrier

513 New evidence of formation of magnetic polaron states in semimetals $GdAs$ and GdP

517 Non-monotonic high frequency flux-flow noise spectra in high- T_c superconductors

523 Microscopic mechanism of suppressing photorefraction in $LiNbO_3: Mg, Fe$ crystals

527 Quantum conductivity exponent of a fractal non-branching Koch curve

531 FTIR study of two types of OH^-/OH^- and OD^-/OD^- defect pairs in KBr

M. Viswanathan, G. K. M. Thutupalli and K. B. R. Varma 535 Structural and optical properties of r.f. sputtered $\text{Bi}_2\text{VO}_5\text{.}_5$ thin films

Junmin Liu and J. X. Zhang 539 Temperature-rate dependent kinetics of martensitic transformation in MnCu alloy

A. Krakovsky 543 Scattering treatment of the quasiparticle effective mass

G. Hu, X. F. Zhang, D. P. Yu, S. Q. Feng, W. Xu and Z. Zhang 547 Cross-sectional transmission electron microscopic study on carbon nanotubules

G. González de la Cruz and A. Calderón 553 Tunneling effect on the intersubband optical absorption in quantum well structures

J. Ranninger and J. M. Robin 559 Breakdown of Landau Fermi liquid properties in the 2D Boson-Fermion model

D. Courtois, Hong-Shuo Li and J. M. Cadogan 565 Determination of the easy magnetisation direction by X-ray diffraction analysis at room temperature in the $\text{R}_3(\text{Fe},\text{M})_{29}$ compounds: $\text{R} = \text{Pr}, \text{Nd}, \text{Sm}, \text{Gd}, \text{Tb}, \text{Dy}$ and Y ; $\text{M} = \text{Ti}$ and V

U. Asaf, D. Hechel and I. Felner 571 Magnetic properties of copper chloride hydroxide hydrate $\text{Cu}_3\text{Cl}_4(\text{OH})_2 \cdot 2\text{H}_2\text{O}$

D. J. Singh 575 Phonons in La_2CuO_4 : local density calculations

J. P. Wilcoxon, P. P. Newcomer and G. A. Samara 581 Strong quantum confinement effects in semiconductors: FeS_2 nanoclusters

I. V. Kityk, J. Kasperekzyk, R. V. Lutciv and M. Sanchez 587 Positron annihilation study of photoinduced changes in YBaCuO 1:2:3 systems

N. Takeuchi and I. L. Garzón 591 *Ab initio* molecular dynamics study of amorphous Ge

D. Arsova, E. Vateva, E. Skordeva and V. Petkov 595 New features of the medium range order in $\text{Ge}_x\text{As}_{40-x}\text{Se}_{60}$ glasses

i **Keywords**

MAY

VOLUME 98, NUMBER 7

1996

(Published 22 April 1996)

CONTENTS

L. Tapfer, L. De Caro, C. Giannini, H.-P. Schönherr and K. H. Ploog 599 Improved model for the determination of strain fields and chemical composition of semiconductor heterostructures by high-resolution X-ray diffractometry

X. S. Wu, H. M. Shao, X. X. Yao, S. S. Jiang, C. Gou and D. F. Chen 605 A qualitative explanation for Hg-1223 superconductor doped with Pb

S. Grabowski, J. Schmalian, M. Langer and K. H. Bennemann 611 Theory for the interdependence of high- T_c superconductivity and dynamical spin fluctuations

F. Demichelis, G. Crovini, F. Giorgis, C. F. Pirri, E. Tresso, V. Rigato, U. Coscia, G. Ambrosone, S. Catalanotti and P. Rava 617 Effects of power density and molecule dwell time on compositional and optoelectronic properties of α -SiC:H alloys

V. V. Gridin, S. Sergeevkov and M. Ausloos 623 Quasi-particle vs vortex motion dissipation in the mixed state of $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ using a Corbino disk sample geometry

M. K. Harbola 629 Theoretical investigation of the polarizability of small metal clusters

B. Bhattacharya, H. M. Upadhyaya and S. Chandra 633 Photoelectrochemical studies of an ion conducting polymer (PEO)/semiconductor (Si) junction

T. H. Moos, W. Hübner and K. H. Bennemann 639 Magnetocrystalline anisotropy energy of a transition metal monolayer: a non-perturbative theory

D. Zhang and R. M. Kolbas 645 Optical absorption and stimulated emission in ultrathin single quantum wells

I. Ardelean, Gh. Ilonca, V. Simon, O. Cozar, V. Ioncu and S. Filip 651 Magnetic properties of $x\text{MnO}\cdot(1-x)[\text{Bi}_2\text{O}_3\text{:PbO}]$ glasses

C. Manfredotti, F. Fizzotti, M. Boero, Mc. Bossi and A. Zanini 655 Determination of the absolute optical absorption coefficient for thermally thick samples by photoacoustic spectroscopy

X. Zhu, G. S. Huang, H. T. Zhou and Y. D. Dai 661 A novel ultrasonic resonance sample-tip distance regulation for near field optical microscopy and shear force microscopy

S. Banerjee, S. Chatterjee and B. K. Chaudhuri 665 Optical reflectivity of superconducting $\text{Bi}_{3.9}\text{Pb}_{0.1}\text{Sr}_3\text{Ca}_3\text{Cu}_4\text{O}_x$ obtained by glass-ceramic route in 0.6-6.2 eV range

H. Nishimoto, T. Okuda, T. Nakatani, H. Daimon, T. Matsushita, S. Imada, S. Suga, H. Namba, T. Ohta, Y. Kagoshima and T. Miyahara 671 Unusual two-dimensional angular distribution of photoelectrons of Kish graphite and 1T-TaS₂

i Keywords

MAY

VOLUME 98, NUMBER 8

1996

(Published 26 April 1996)

CONTENTS

P. Peka, H. R. Selber, H.-J. Schulz, R. Schwarz and K. W. Benz 677 V⁺(d⁴) and V²⁺(d³) ion states in CdTe evidenced by photoluminescence

L. Wendler and V. G. Grigoryan 683 Resonance and fine-structure effects in the spectrum of magnetoplasmons in quantum-well wires

M. Lenglet and B. Lefez 689 Infrared optical properties of cobalt (II) spinels

J. Valenta, D. Guennani, A. Manar, B. Hönerlage, T. Cloitre and R. L. Aulombard 695 Optical gain in ZnS epilayers

R. Mahendiran, S. K. Tiwary and A. K. Raychaudhuri 701 Thermopower of giant magnetoresistive oxide system $\text{La}_{1-x}\text{Cu}_x\text{MnO}_3$ ($0.1 \leq x \leq 0.4$)

G. F. Lorusso, F. Tassone, V. Capozzi, C. Perna and D. Martin 705 Reflectance of GaAs/(AlGa)As disordered superlattices

Xiaomei Li and V. E. Henrich 711 Observation of unusual surface defect behavior on single crystal Cr₂O₃(1012) under ion bombardment

O. Romulo Ochoa, C. Colajacomo, E. J. Witkowski III, J. H. Simmons and B. G. Potter Jr 717 Quantum confinement effects on the photoluminescence spectra of CdTe nanocrystallites

S. L. Yan, L. Fang, M. S. Si, J. Wang, H. L. Cao, Q. X. Song, X. D. Zhou and J. M. Hao 723 The stability of epitaxial Tl₂Ba₂CaCu₂O₈ thin films in water

Ta-Ryeong Park 727 A relationship between sound speed and a nonradiative relaxation process in sodium cryptand sodide

Piao Mingjun, Wan Meixiang, Lu Fengcai and Liu Zhenxing 733 Electrical properties of pyrolyzed polypyrrolone film under pressure

W. J. Fan, M. F. Li, T. C. Chong and J. B. Xia 737 Optical gain in zinc-blende GaN/Ga_{1-x}Al_xN strained quantum well laser

P. E. van Camp and V. E. van Doren 741 Ground state properties and structural phase transformation of berylliumsulphide

D. Q. Chen, J. M. Viner and P. C. Taylor 745 On the nature of the paramagnetic defects in hydrogenated amorphous silicon nitride

R. J. Egan, V. W. L. Chin, K. S. A. Butcher and T. L. Tansley 751 Hydrogenation passivation of acceptors in MOCVD grown p-INSB

H. Tajima, A. Kobayashi, T. Naito and H. Kobayashi

R. Nagarajan, R. Gundakaram and C. N. R. Rao

O. Bidault, M. Licheron, E. Husson, G. Calvarin and A. Morell

755 Shubnikov-de Haas effect and angular-dependent magneto-resistance oscillation of κ -(BETS)₂GaCl₄

761 Phosphate derivatives of 123 cuprates of the formula LnSr₂Cu₃O₇ (Ln=Gd, Dy, Ho)

765 Experimental evidence for a spontaneous relaxor to ferroelectric phase transition in Pb(Mg_{1/3}Nb_{2/3})O₃-10% Ti

i Author Index Nos 1-8

vii Keywords

JUNE

VOLUME 98, NUMBER 9

1996

(Published 8 May 1996)

CONTENTS

R. J. Radtke and S. Das Sarma

771 Collective modes in a symmetry-broken phase: antiferromagnetically correlated quantum wells

M. Stenger, G. Ockenfuß, M. Reese, T. Königs, R. Wördenweber, C. Barre, J.-Y. Prieur and J. Joffrin

777 *In situ* X-ray measurements of oxygen-out diffusion in YBa₂Cu₃O_{7- δ} thin films

S. Pau, G. Björk, H. Cao, E. Hanamura and Y. Yamamoto

781 Theory of inhomogeneous microcavity polariton splitting

H. Ebert and M. Battocletti

785 Spin and orbital polarized relativistic multiple scattering theory—with applications to Fe, Co, Ni and Fe_xCo_{1-x}

A. B. Oparin and J. J. Quinn

791 Magnetic field dependence of the carrier concentration in a modulation doped dilute magnetic semiconductor quantum well structure

I. A. Fomin and J. Flouquet

795 Tiny moment magnetism and thermal fluctuations in UPt₃

Xumou Xu and R. G. Jordan

799 Surface states on the (001) and (100) surfaces of equi-atomic CuAu I

A. Di Carlo, S. Pescetelli, M. Paciotti, P. Lugli and M. Graf

803 Self-consistent tight-binding calculations of electronic and optical properties of semiconductor nanostructures

Hailin Wang, Jagdeep Shah, T. C. Damen, A. L. Ivanov, H. Haug and L. N. Pfeiffer

807 Transient optical emission from excitonic molecules in GaAs quantum wells: coherent quantum evolution in momentum space

T. Böske, M. Kielwein, M. Knupfer, S. R. Barman, G. Behr, M. Buchgeister, M. S. Golden, J. Fink, D. J. Singh and W. E. Pickett

813 Core electron spectroscopic studies of YNi₂B₂C

Ph. Lelong and G. Bastard

819 Binding energies of excitons and charged excitons in GaAs/Ga(In)As quantum dots

Kyurhee Shim, Jung-Wook Bae, So-Yeon Jeong, Heh-Jeong Moh and D. N. Talwar

825 Composition dependence of the bond lengths in the quaternary semiconducting alloy (A_{1-x}B_xC_{1-y}D_y)

Liang-Yao Chen, Shi-Ming Zhou, Yi Su, Hong-Zhou Ma, Pei-Ju Zheng, You-Hua Qian, Chen-Jia Chen, Xue-Zhong Wang and W. Giriath

829 Study of optical and magneto-optical anisotropy of the Cd_{1-x}Mn_xTe crystal

J. Reinke, S. Greulich-Weber and J.-M. Spaeth

835 Optically detected electron paramagnetic resonance of the shallow aluminium acceptor in 4H- and 6H-silicon carbide

A. Z. Menshikov, Yu. A. Dorofeev, N. A. Mironova and M. V. Medvedev

839 The magnetic state of diamagnetically diluted antiferromagnetic cobalt monoxide

B. P. Maurya, M. Ikram, S. Khan and R. J. Singh

843 S = 1/2, S = 1 and S = 2 EPR spectra in copper doped KHSO₄ single crystal

P. Hawrylak, A. Wojs and J. A. Brum

847 Magneto-excitons in droplets of a chiral Luttinger liquid formed in quantum dots in a magnetic field

V. Capozzi, G. Casamassima, G. F. Lorusso, A. Minafra, R. Piccolo, T. Trovato and A. Valentini	853 Optical spectra and photoluminescence of C_{60} thin films
VOLUME 98, NUMBER 10	
(Published 10 May 1996)	
CONTENTS	
R. G. Dias and J. M. Wheatley	859 Superconducting upper critical field near a 2D van Hove singularity
S. W. Biernacki	863 A bistable behavior of the Si and Se donors in $Al_xGa_{1-x}As$
M. Kupka	869 Differential conductance of a tunnelling contact between an ordinary metal and an anisotropic marginal-Fermi-liquid metal or heavy-fermion metal
G. Cannelli, R. Cantelli, F. Cordero, E. Giovine, F. Trequattrini, M. Capizzi and A. Frova	873 Quantum diffusion of deuterium in GaAs:Zn
T. Sharda, D. S. Misra, D. K. Avasthi and G. K. Mehta	879 Dissociation kinetics of molecular hydrogen in a microwave plasma and its influence on the hydrogen content in diamond films
A. K. Ghatare, S. A. Patil and S. K. Paranjpe	885 Neutron diffraction study of chromium substituted nickel ferrite
Y. N. Skryabin and A. V. Chukin	889 Small angle neutron scattering by melted superconducting vortex lines
I. Bat'ko, M. Bat'ková, K. Flachbart, J. Kováč, E. S. Konovalova, Yu. B. Paderno and S. Ramakrishnan	895 High residual electrical resistivity of carbon doped EuB_6
D. J. Singh	899 Electronic properties of YNi_2B_2C
I. L. Bronevai, A. N. Krivonosov and T. A. Nalet	903 An overthreshold state of electron-hole plasma in GaAs at interband absorption of high-power picosecond light pulses
Shi-Dong Liang, Z. D. Wang and Jian-Xin Zhu	909 Impurity effect on the persistent current via Aharonov-Bohm effect in one-dimensional mesoscopic rings: tight-binding model
K. Ishikawa, J. Kanasaki, K. Tanimura and Y. Nakai	913 Site-sensitive yield of atomic emission induced by laser irradiation on $Si(111)-7\times7$ surface
P. Campone, G. Spinolo, A. Vedda, R. Checchetto, L. M. Gratton, A. Mioltello and A. Tomasi	917 Hydrogen desorption from crystalline quartz and some related differential-scanning calorimetry and conductivity phenomena
D. M. Christie, N. Troullier and J. R. Chelikowsky	923 Electronic and structural properties of α -berlinite ($AlPO_4$)
S. Rama Rao and C. S. Sunandana	927 Electrical and allied studies of quenched lithium sodium sulphate
A. S. T. Pires	933 Onsager reaction field theory of Josephson junction arrays
K. Pękała, P. Jaśkiewicz and P. Nowicki	937 Electron transport study of nanocrystallization of $Fe-Zr-Cu-B$ alloys
i Keywords	

C. L. Petersen and O. P. Hansen

T. Kuroda, K. Inoue, R. Kurabayashi, F. Minami, I. Suemune and A. Mysyrowicz

Y. Kobayashi and H. Kamimura

E. Simoen, J. Vanhellemont and C. Claeys

W. Sheils, J. D. Riley and R. C. G. Leckey

D. J. Payne, M. Chandrasekhar, H. R. Chandrasekhar, B. Jayaram and J. Ulanday

V. A. Atsarkin, V. V. Demidov, G. A. Vasneva, A. Jánossy, O. Chauvet and L. Forró

S. Papian, P. de V. du Plessis, V. V. Gridin and A. M. Strydom

S. K. Dhar, R. Nagarajan, Z. Hossain, E. Tominez, C. Godart, L. C. Gupta and R. Vijayaraghavan

V. Aninkevičius, V. Bareikis, R. Katilius, J. Liberis, I. Matulionienė, A. Matulionis, P. S. Kop'ev and V. M. Ustinov

F. Damay, N. Nguyen, A. Maignan, M. Hervieu and B. Raveau

V. V. Laguta, M. D. Glinchuk, I. P. Bykov, M. I. Zaritskii, J. Rosa, L. Jastrabík, V. Trepakov and P. P. Syrnikov

Q. J. Xing, J. L. Brebner, X. M. Luo, M. Beaujouin, A. Chennouf, G. Ahmad and C. W. Chen

S. Saintenoy, P. Wetzel, C. Pirri, D. Bolmont and G. Gewinner

R. Kato, You-Liang Liu, S. Aonuma and H. Sawa

Y.-K. Kuo, D. K. Powell and J. W. Brill

947 Two-dimensional electron gases in the quantum Hall regime: analysis of the circulating current in contactless Corbino geometry

951 Observation of biexciton in ZnSe/ZnSSe quantum wells through transient four-wave mixing

957 Band structures, optical transition strengths and their pressure dependence of $(\text{GaP})_n(\text{AlP})_n$ short-period superlattices with $n = 3$ to 10

961 On the relationship between the bulk recombination lifetime and the excess 1/f noise in silicon p-n junction diodes

965 The use of symmetry for absolute $E(\mathbf{K})$ determinations from IPS measurements of face-centred cubic crystals971 Evidence for chain site substitution of nickel in $\text{YBa}_2(\text{Cu}_{1-x}\text{Ni}_x)_4\text{O}_8$ 977 Longitudinal electron-spin relaxation in RbC_{60} 981 Low-temperature magnetoresistance of CePt_2Sn_2 985 Anomalous suppression of T_c and moderate heavy fermion behaviour in $\text{YbNi}_2\text{B}_2\text{C}$

991 Transverse tunnelling time constant estimated from hot-electron noise in GaAs-based heterostructure

997 Colossal magnetoresistance properties of samarium based manganite perovskites

1003 Chromium impurities in incipient ferroelectric KTaO_3

1009 Effect of rapid thermal annealing on the optical and structural properties of highly strained InAs/InP quantum well structures

1015 Observation of a temporal evolution of defected epitaxial erbium silicide layers at room temperature

1021 Cation size effect in molecular conductors related to the high-pressure superconductor $\beta\text{-Me}_4\text{N}[\text{Pd}(\text{dmit})_2]_2$ ($\text{dmit} = 2\text{-thioxo-1,3-dithiole-4,5-dithiolate}$)1027 Magnon specific heat of CuGeO_3 in the spin-Peierls state

i Keywords

JUNE

VOLUME 98, NUMBER 12

1996

(Published 24 May 1996)

CONTENTS

T. Ohgi, Y. Shimazu, S. Ikehata and R. Kato

Na Sai, Bao-zhen Zheng, Ji-zong Xu, Peng-hua Zhang, Xiao-ping Yang and Zhong-ying Xu

J. I. Akhter, K. Yaldram and W. Ahmad

A. C. Bódi, I. Kirschner, R. Laiho and E. Lähderanta

1033 Effects of pressure and magnetic field on metal-insulator transition of partially deuterated $(\text{DM-DCNQI-}d_3[1,1;1])_2\text{Cu}$ around reentrant metallic region1039 Photoluminescence studies of GaAs/AlGaAs single quantum well intermixed by Ga^+ ion implantation

1043 Premelting on the low-index faces of palladium

1049 Critical state instabilities observed on YBCO-ceramics at ultralow fields near T_c

S. J. Chua, S. J. Xu and X. H. Tang

Z. L. Wang, J. Wu, Z. J. Yang, Y. Y. Zhu and N. B. Ming

J. A. Corrêa F., A. G. de Oliveira, M. I. N. da Silva, M. V. B. Moreira, G. M. Ribeiro and H. Chacham

Guang-ping He, Yi-chang Zhou and Yi-zhong Fang

K. Z. Wang, L. H. Gao, C. H. Huang, G. Q. Yao, X. S. Zhao, X. H. Xia, J. M. Xu and T. K. Li

Xu Yusheng, Qian Min, Qu Feng, Jiang Huali, Jin Zongming and Xu Song

F. Köksal, İ. Kartal and F. Ucun

A. A. Shanenko, M. A. Smolyrev and J. T. Devreese

K. M. Pansuria, U. S. Joshi, D. G. Kuberkar, G. J. Baldha and R. G. Kulkarni

N. Grigorchuk

I. M. Tang and P. Winotai

1053 AlGaAs optical phonon replicas in the photoluminescence spectra of GaAs layer in an $\text{Al}_{0.3}\text{Ga}_{0.7}\text{As}/\text{GaAs}$ heterostructure

1057 Optical bistability and hysteresis in a two-dimensional periodic structure fabricated in Fe doped LiNbO_3

1063 Temperature dependence of the equilibrium Hall concentration in silicon planar-doped GaAs samples

1069 Hydrogenic impurities versus the effective dimensionality in quantum-well-type systems

1075 Langmuir-Blodgett films of a series of new fluorescent ternary europium(III) complexes

1081 The radio frequency effects and the soft magnetic property of amorphous and nanocrystalline FeCuNbMoSiB alloys

1087 Electron paramagnetic resonance of Cu^{2+} in $\text{Cd}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$

1091 Stabilization of bipolarons by polaron environment

1095 Influence of hole filling by Co and hole doping by Ca on the superconductivity of $\text{ErBa}_2\text{Cu}_3\text{O}_{7-\delta}$

1099 Light absorption coefficient for the transition into bound electron-exciton states of the one-dimensional molecular structures

1101 The isotope effect in the doped-fullerene superconductors

1105 Author Index Nos 1-12

i Keywords

